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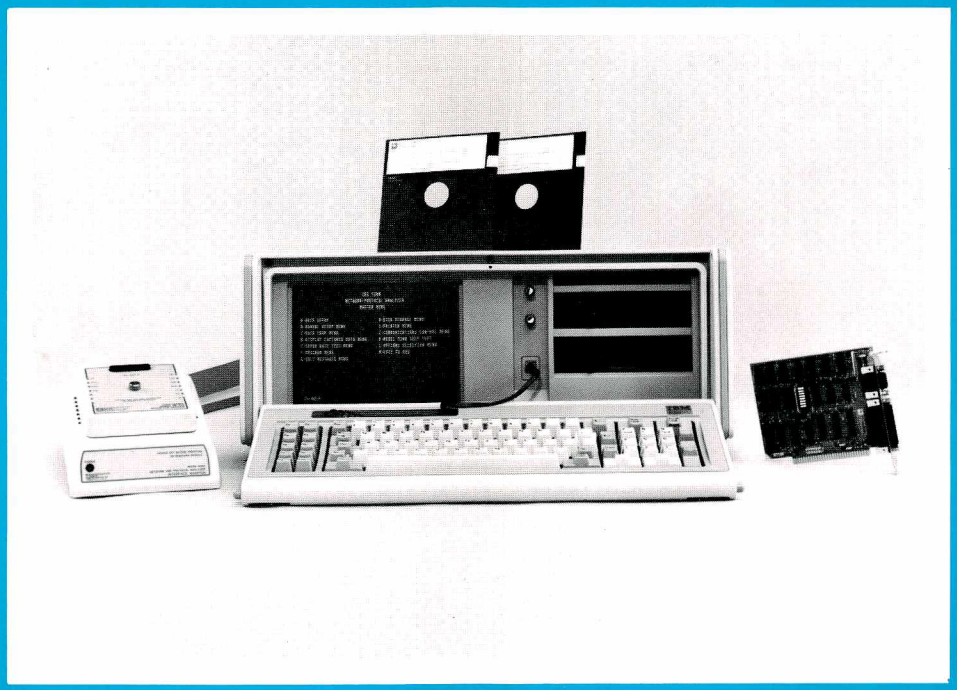
IDS

MODEL 5300 NETWORK AND PROTOCOL ANALYZER



- Converts an IBM PC*, PC-XT, or PC portable into a powerful, programmable, and economical protocol analyzer
- Capable of Protocol Analysis, BERT, BLERT, EFS tests, Terminal and Controller tests, Trap and Monitor, DTE/DCE Emulation, User-Program Execution, Simulations, Message Transmission, and Automatic Set Up
- Capable of Synchronous or Asynchronous testing at data rates up to 72 kbps
- Provides central network control of a remote Model 5100, 5200, or another 5300
- Automatic set up of Data Rate, TD Timing, Code Set, Duplex, Code Level, Sync Characters, Protocol, and more
- Terminal and host emulation using Asynchronous, Synchronous, BSC, HDLC, and SDLC Protocols
- Complete menu-driven application software with supportive HELP screens
- Unique test applications and programming capabilities provided by the user-friendly IDS DATASOLVE language

INTERNATIONAL DATA SCIENCES INC.
LINCOLN, R.I., U.S.A.

Model 5300 Network and Protocol Analyzer

THE ULTIMATE IN PROTOCOL ANALYZERS

IDS' Model 5300 Network and Protocol Analyzer can remotely control other 5000 Series members and perform pertinent tests, supporting speeds up to 72 kbps. It is capable of Protocol Analysis, Bit and Block Error Rate tests, Error-Free Seconds tests, Trap and Monitor tests, DTE/DCE Emulation, User-Program Execution, Message Transmission, Automatic Set Up, and more.

Composed of an internal short slot PC Adapter board, an external Interface Adapter, and the IDS application software, the Model 5300 converts an IBM PC*, PC-XT, or PC Portable into an economical and powerful, programmable protocol analyzer. The Model 5300 operates either as a stand-alone portable device or in conjunction with other 5000 Series equipment in a network.

User-menu selections and corresponding HELP screens guide the operator through the most complicated testing procedures to ensure proper testing configurations and execution. With IDS' DATASOLVE programming language, tests can be programmed for a variety of applications. This language is easy to learn because of its English language sentence structure.

The Model 5300 has an automatic setup feature which configures Data Rate, TD Timing, Code Set, Duplex, Protocol Configurations, and more. In addition, it can down-line load function module capability, up-line load test results and data, and remotely control any member of the 5000 Series. The remote control feature also allows central operation of any 5000 family member from any Model 5300 at one location.

REMOTE OPERATIONS

The Model 5300 is so simplistic that when remotely controlling other 5000 Series members, the Model 5300 graphically displays the front panel features of the remote controlled unit. The user is then capable of centrally controlling the remote unit from the Model 5300.

In Figure 1, for example, the Model 5100's controls, indicators, and current test mode are depicted on the screen. Each switch or key on the remote Model 5100 is displayed on the Model 5300 display and labeled with an alphabetic character to allow the user to activate the appropriate key or switch on the remote test set. For example, the user can turn the RTS switch from the "On" position to the "Auto" position at the remote site, by simply pressing the [M] key.

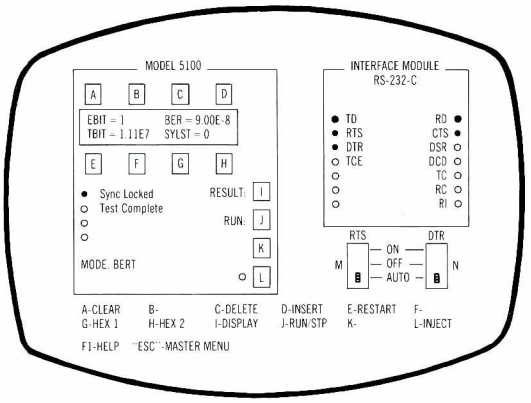


FIGURE 1. The Front Panel of the Model 5100 being displayed on the screen of the Model 5300

MENU-DRIVEN OPERATION WITH HELP SCREENS

Menus and HELP screens guide the user to operate the Model 5300 with ease. The menus prompt the user to select configurations and execute data and error rate testing, message editing, self-testing, disk storage, and trapping and monitoring of data.

Relative expertise can be acquired following only minutes of initial use. This is because of HELP screens, which can be accessed at any point during menu selection. Each menu has a HELP screen which explains the operation being performed as well as the expected input. These HELP screens facilitate operation and programming of the Model 5300.

Figure 2 is the representation of the MASTER MENU selections. This menu is the primary one from which all other menus and functions are accessed and performed. The MASTER MENU is displayed when the Model 5300 is initiated.

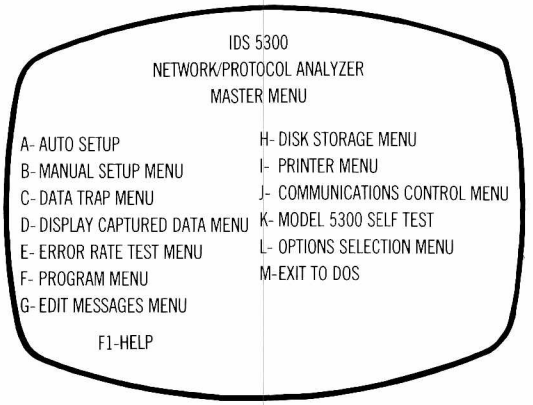


FIGURE 2. MASTER MENU

A list and explanation of each of the MASTER MENU options are as follows:

A—AUTO SETUP: allows the Model 5300 to determine line characteristics. When attached to an active communications channel, this selection automatically configures the parameters for the following protocol selections: Data Rate, TD Timing, Code Set, Duplex, Protocol, and many protocol dependent selections such as Parity, Stop Bits, XOn/XOff, Timing, Idle Character, Sync Characters, and Code Level.

B—MANUAL SETUP MENU: is chosen when the Model 5300 is not attached to an active link, or when the configurations must be set manually. Automatic setup options are displayed when this selection is made. Options include setting Data Rate, TD Timing, Code Set, Duplex, Mode, Display, Protocol, Code Level, Parity, Stop Bits, Flow Control (XOn/XOff), Timing, Sync Characters, Idle Character, Idle Count, Resync Character, and Encoding.

C—DATA TRAP MENU: allows the trapping and timer functions to be set and executed. Separate functions can be defined for both TD and RD. The timer can be set to measure the time between trap events with various configurations. Available selections in this menu include TD and RD Trap, Trap Position, Timer, and Run Data Trap.

D—DISPLAY CAPTURED DATA MENU: allows RD and TD test data (received from an on-line operation or loaded in) to be replayed in the capture buffer in a wide variety of formats including split screen, row/character interleaved, RD, TD, or RD

and TD. The capture buffer can store 16K of characters and 16K of status. Status indicates TD or RD, Trap or Not Trap, status of RTS, CTS, and DCD, and three bits for internal Model 5300 use.

E—ERROR RATE TEST MENU: allows the user to set up and perform an error rate test. The user can select the following test parameters: Pattern, Block Size, Test Duration, and Run. This menu selection allows the user to observe the total bits/blocks received, bit/block errors, bit/block error rates, total seconds, errored seconds, percent of error-free seconds, as well as the number of sync losses. The test also allows the user to reset counters and timers, inject single/continuous errors, and print an error log. Counters indicate the progress of the test, the receiver status, error injection status, and error printing status.

F—PROGRAM MENU: allows the user to create, edit, and run DATASOLVE programs and registers. An additional selection allows single stepping a program which is a very helpful debugging aid. DATASOLVE programs can be up to 1,024 steps long or longer with the use of overlays. 50 general purpose registers can be used as timers, error counters, loop counters, delay values, and more. DATASOLVE includes more than 60 instructions tailored to data and protocol analysis and simulation. Various instructions allow messages to be transmitted and received, message comparisons, control line manipulation, arithmetic operations, timeouts, time measurements, CRC generation and check, user-input, message/menu display, and much more. A printer log can be enabled to keep a hard copy for long term tests.

G—EDIT MESSAGES MENU: allows messages to be created, modified, displayed, or deleted. Up to 50 messages can be stored in the buffer. The size of the message buffer is 8K, with the maximum message length being the same size.

H—DISK STORAGE MENU: offers a variety of options that allow data, programs, and messages to be stored on or loaded from disk. Selections in this menu include options to save or load various combinations of the set up, configuration, program, trap and error rate test set up, messages, and capture data.

I—PRINTER MENU: allows the user to print hard copy of the program, set up, messages, and captured data. Selections include printing of the set up configuration, program listing, and message buffer and capture buffer contents.

J—COMMUNICATIONS CONTROL MENU: is used for all remote operations. It allows selection of COM1 or COM2 as the serial port; operation with the Model 5100, 5200, or 5300; operation as a remote unit; or to transfer, set up, or capture buffer data to or from the Model 5300.

K—MODEL 5300 SELF TEST: allows a thorough self-test to be run. This test is much more extensive than the automatic power-up test.

L—OPTIONS SELECTION MENU: allows access to any special Model 5300 options.

M—EXIT TO DOS: allows the user to return to the control of the PC Disk Operating System (DOS). The Model 5300 is under the control of the 5300 system disk before this option is selected.

Example of Menu Selection

Configurations can be easily changed by simply pressing a few keys. For example, the user simply presses the [B] key to change the data rate. "B" is a menu selection in the MASTER MENU shown in Figure 2. The result of pressing this key is the instant display of the MANUAL SETUP MENU which is shown in Figure 3. Then, the user presses the [A] key, the menu letter which represents DATA RATE in the MANUAL SETUP MENU. This causes the screen contents shown in Figure 4 to be instantly displayed.

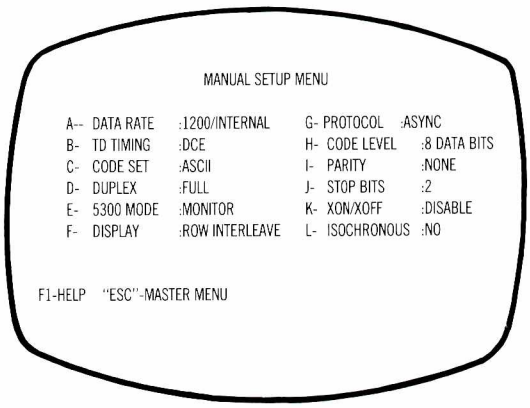


FIGURE 3. MANUAL SETUP MENU

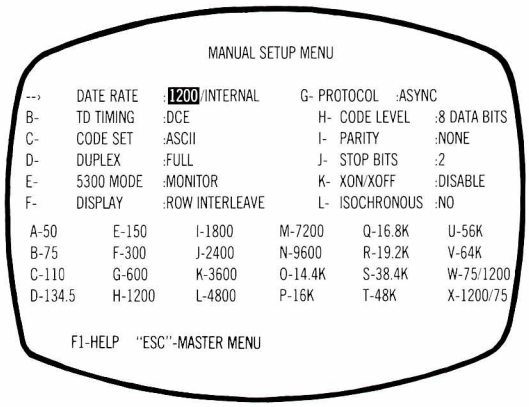

MANUAL SETUP MENU
--› DATE RATE :1200/INTERNAL
B- TD TIMING :DCE
C- CODE SET :ASCII
D- DUPLEX :FULL
E- 5300 MODE :MONITOR
F- DISPLAY :ROW INTERLEAVE
G- PROTOCOL :ASYNC
H- CODE LEVEL :8 DATA BITS
I- PARITY :NONE
J- STOP BITS :2
K- XON/XOFF :DISABLE
L- ISOCHRONOUS :NO
A-50 E-150 I-1800 M-7200 Q-16.8K U-56K
B-75 F-300 J-2400 N-9600 R-19.2K V-64K
C-110 G-600 K-3600 O-14.4K S-38.4K W-75/1200
D-134.5 H-1200 L-4800 P-16K T-48K X-1200/75
F1-HELP "ESC"-MASTER MENU

FIGURE 4. DATA RATE MENU

Notice that the letter [A] is replaced by an arrow and the number "1200" is displayed in reverse video (a negative display image). This indicates that the options at the bottom of the screen will affect the data rate number in this menu selection. Below the MANUAL SETUP MENU are the 24 available data rates, each represented by a letter. If the data rate must be changed to 2400 bps, then the user presses the [J] key, the menu letter that represents "2400" bps. If the clocking is to remain INTERNAL, then the user presses the [RETURN] key and the screen shown in Figure 5 is then displayed. The second dash following the letter "A" indicates that the DATA RATE MENU was accessed.

Model 5300 Network and Protocol Analyzer

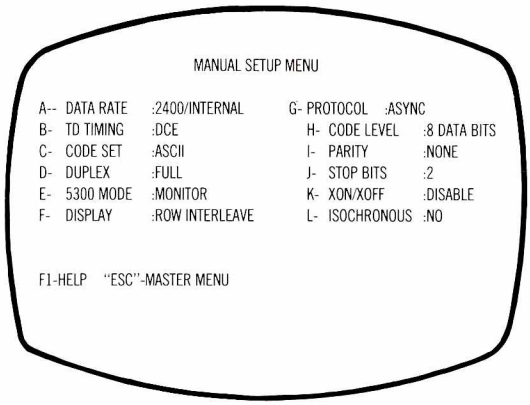


FIGURE 5. MANUAL SETUP MENU After DATA RATE is Selected

HELP screens provide further support for guiding the user through any point in programming, configuring, or testing. For example, after accessing the DATA RATE selection in the above application, the user can consult the HELP screen shown in Figure 6 by pressing the [F1] key. The user can return to the exact point at which the HELP screen was accessed by pressing [F2].

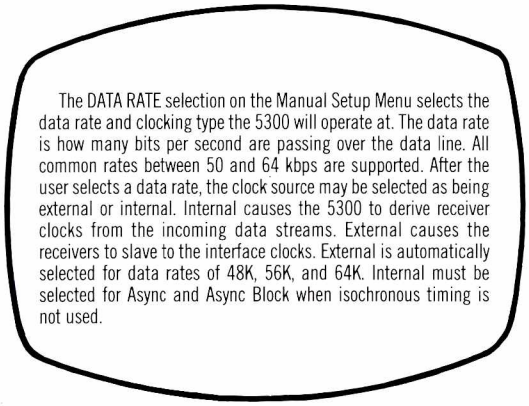

The DATA RATE selection on the Manual Setup Menu selects the data rate and clocking type the 5300 will operate at. The data rate is how many bits per second are passing over the data line. All common rates between 50 and 64 kbps are supported. After the user selects a data rate, the clock source may be selected as being external or internal. Internal causes the 5300 to derive receiver clocks from the incoming data streams. External causes the receivers to slave to the interface clocks. External is automatically selected for data rates of 48K, 56K, and 64K. Internal must be selected for Async and Async Block when isochronous timing is not used.

FIGURE 6. HELP Screen for the DATA RATE Selection in the MASTER MENU

MODEL 5300 COMPONENTS: PC ADAPTER BOARD, INTERFACE ADAPTER, AND SOFTWARE

The Model 5300 consists of a short slot PC Adapter board, an external Interface Adapter, and IDS developed application software. The PC Adapter is a short slot card designed for insertion into the back of an IBM PC*, PC-XT, or PC Portable. The Interface Adapter is external to the PC. The applications software is contained on diskettes for insertion into the PC.

The Interface Adapter allows the PC to operate with a variety of 5000 Series interfaces. It also contains firmware for general subroutines, performing self-test and up-line/down-line loading programs. Interface modules plug into the top of the Interface Adapter. The Interface Adapter contains 64K RAM, EPROM, serial ports, PC communications port, and clocking logic.

The PC Adapter provides a high speed interface between the IBM PC* and the Interface Adapter. Connection of this to the Interface Adapter is via two ribbon cables.

Model 5300 application software stores software modules for the Interface Adapter and data and character generator files. This program, which is written in "C" language and 8088 assembly code, runs under the PC Disk Operating System (DOS).

INTERFACE MODULES

The Model 5300 Data Network and Protocol Analyzer will support several interface modules such as EIA RS-232-C, RS-449 (both single-ended and balanced), and CCITT V.35.

Interface modules permit connection to either your DTE or DCE devices. When the module is plugged into the Interface Adapter, it identifies itself to the Model 5300 and LEDs monitor received interface signals. Lettering on the module allows the user to identify signals being monitored by LEDs on the Interface Adapter. Each module provides data, control, and clocking signals.

SPECIFICATIONS

DIMENSIONS:
Interface Adapter: 8.0" (21.59 cm.) x 5.75" (17.78 cm.) x 1.75" (2.54 cm.) (DxWxH)
PC Adapter Board: 5.75" (14.6 cm.) x 0.75" (1.9 cm.) x 5.25" (13.4 cm.) (DxWxH)

WEIGHT:
Interface Adapter: 1.5 lbs. (0.68 kg.)
PC Adapter Board: 0.25 lbs. (0.1 kg.)

FRONT PANEL: Scratch resistant LEXAN®

PC CONFIGURATION REQUIREMENTS:
The Model 5300 requires an IBM PC*, PC-XT, or PC Portable to operate. Following are the minimum requirements:
- PC DOS 2.1
- 256K RAM
- 2 disk drives (360K or 360K + Hard)
- Color/Graphics Adapter (IBM*)

The following are optional if certain features are used:
- Async Adapter (for remote operations)
- Printer Adapter (for printing operations)

POWER: (supplied by the PC or an optional power supply):

Interface Adapter:	Voltage	Current
	+5VDC (logic)	1.0 Amp
	+12VDC (interface module)	0.2 Amp
	-12VDC (interface module)	0.2 Amp

PC Adapter Board: 5 V supply on PC bus (consumes less than 0.25 Amps)

Optional Power Supply: Supplies power to interface adapter for cases where the PC power supply is already heavily loaded

TEMPERATURE: (Operation) 60° to 90° F (15.6° to 32.2° C) (limited by PC)
(Storage with PC) 50° to 100° F (10° to 43° C)
(Storage separate from PC) -4° to 158° F (-20° to 70° C)

HUMIDITY: 8 to 80% (limited by PC)

*IBM Personal Computer is a registered trademark of IBM Corp.

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